FIG. 1

ENCODING

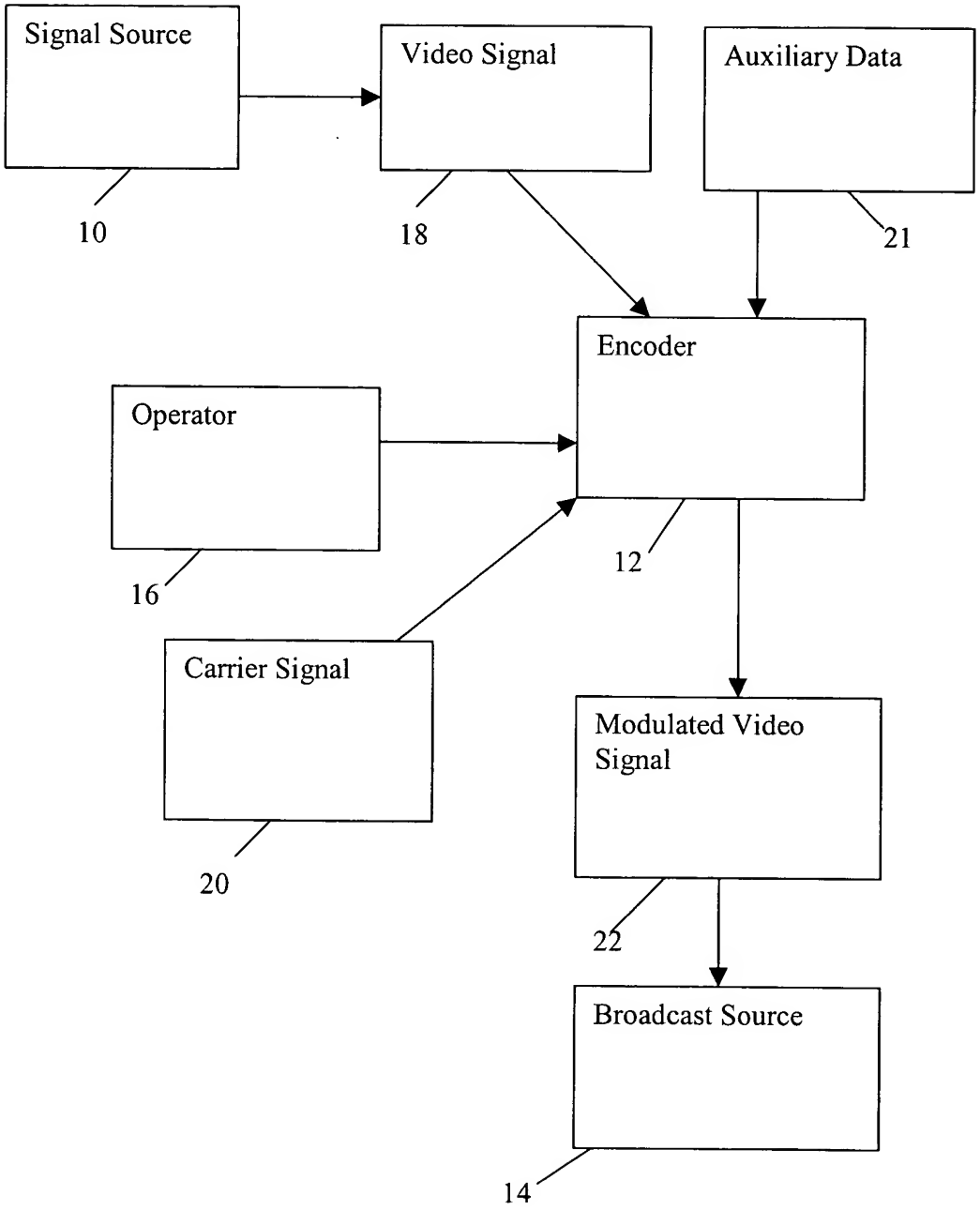


FIG. 2

DECODING

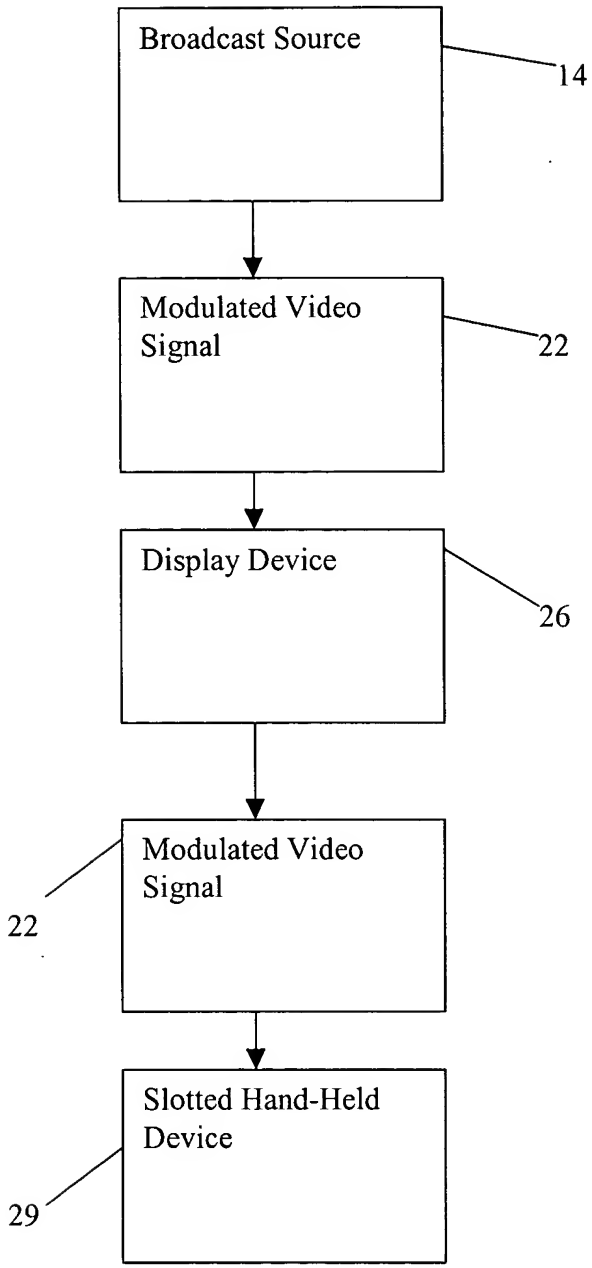


FIG. 3

SLOTTED HAND-HELD DEVICE

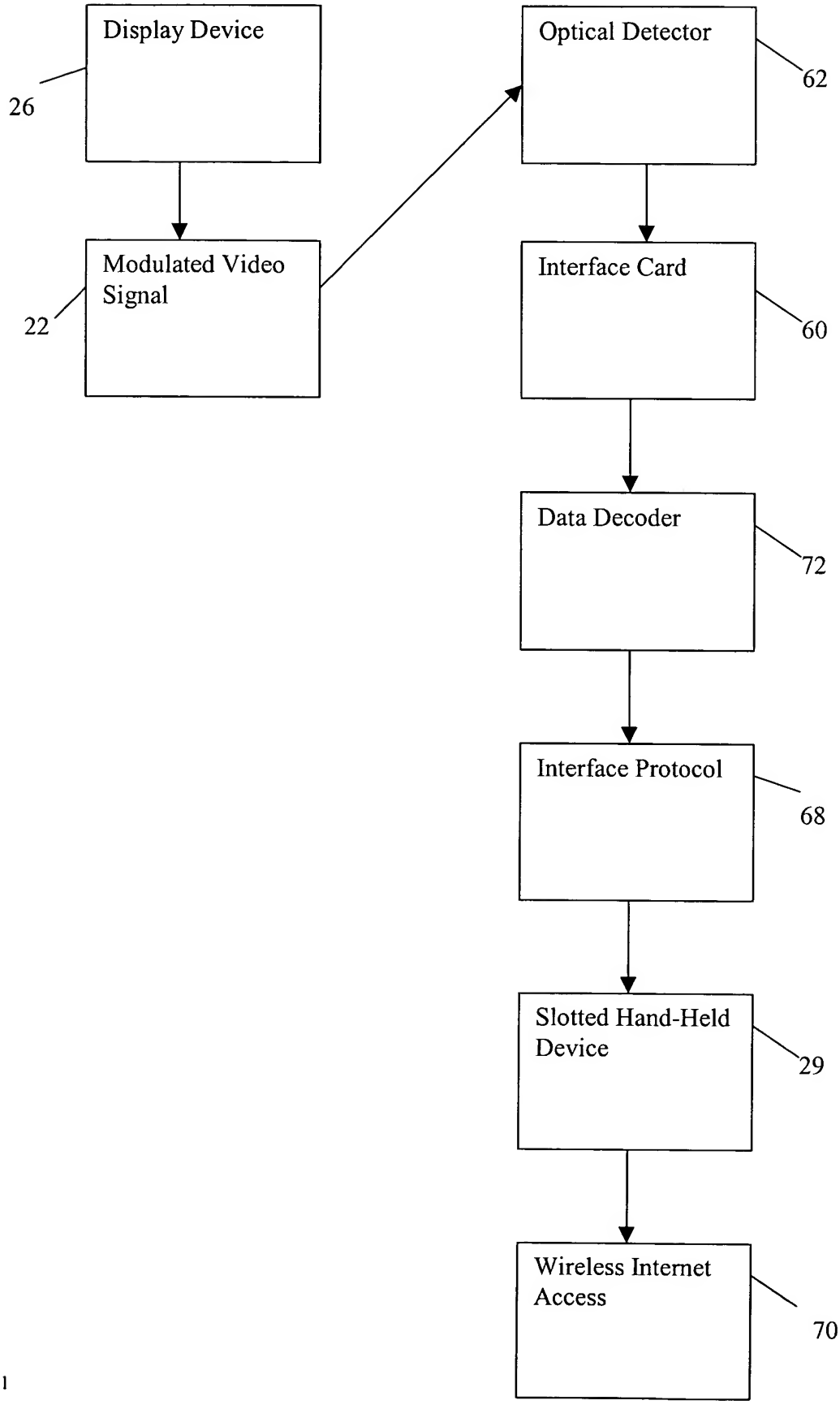
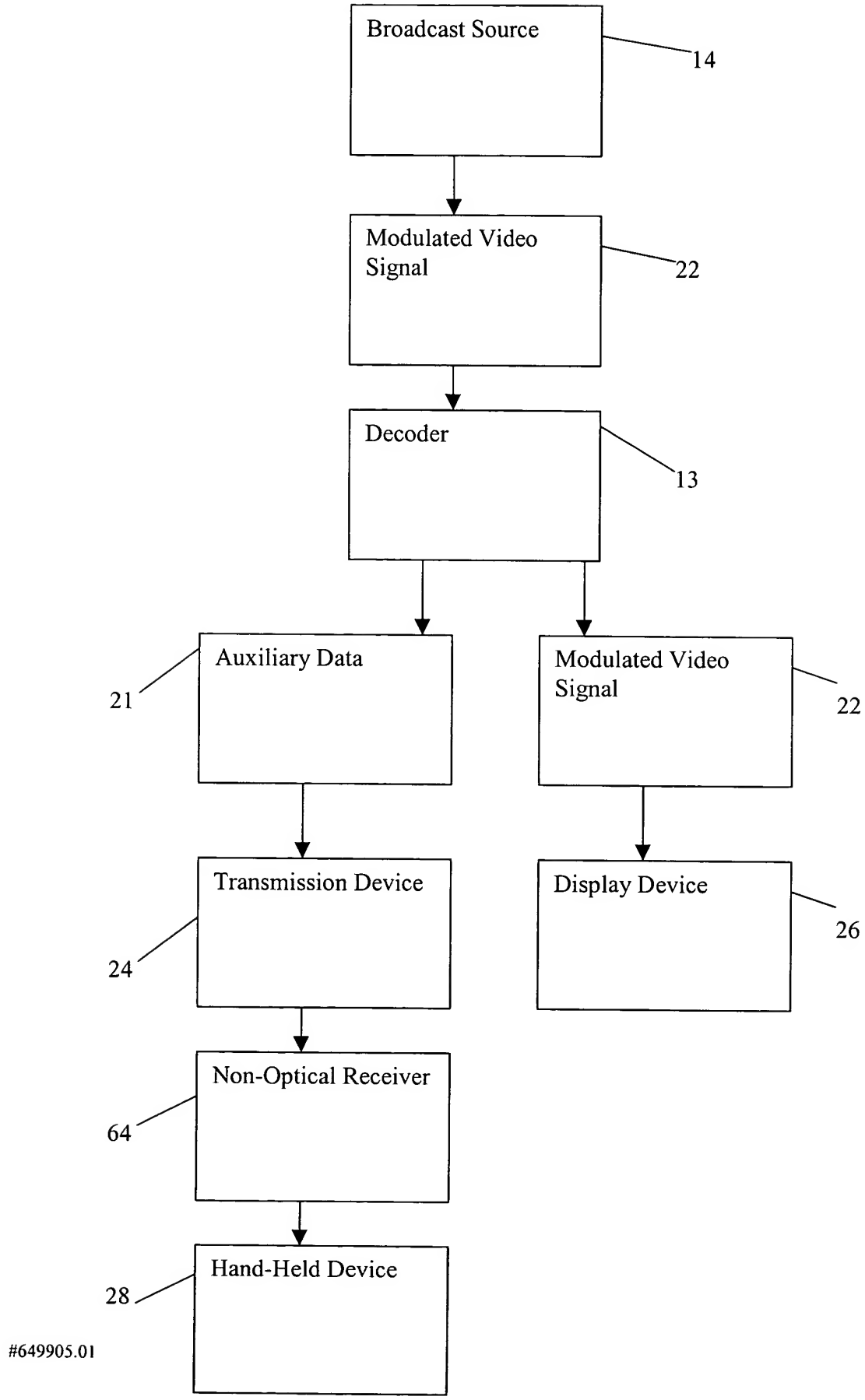


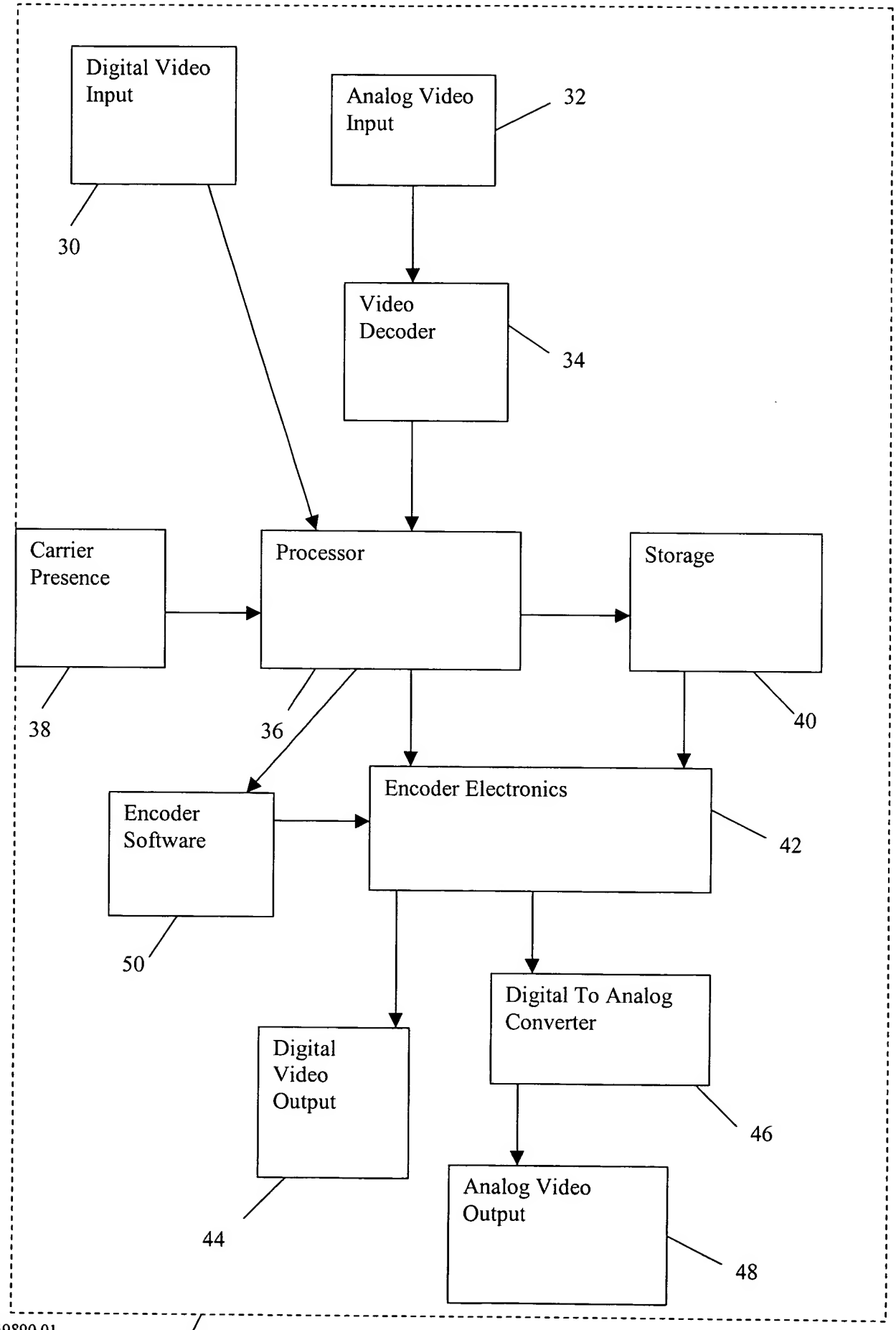
FIG. 4



#649905.01

ENCODER

FIG. 5



#649890.01

Fig. 6

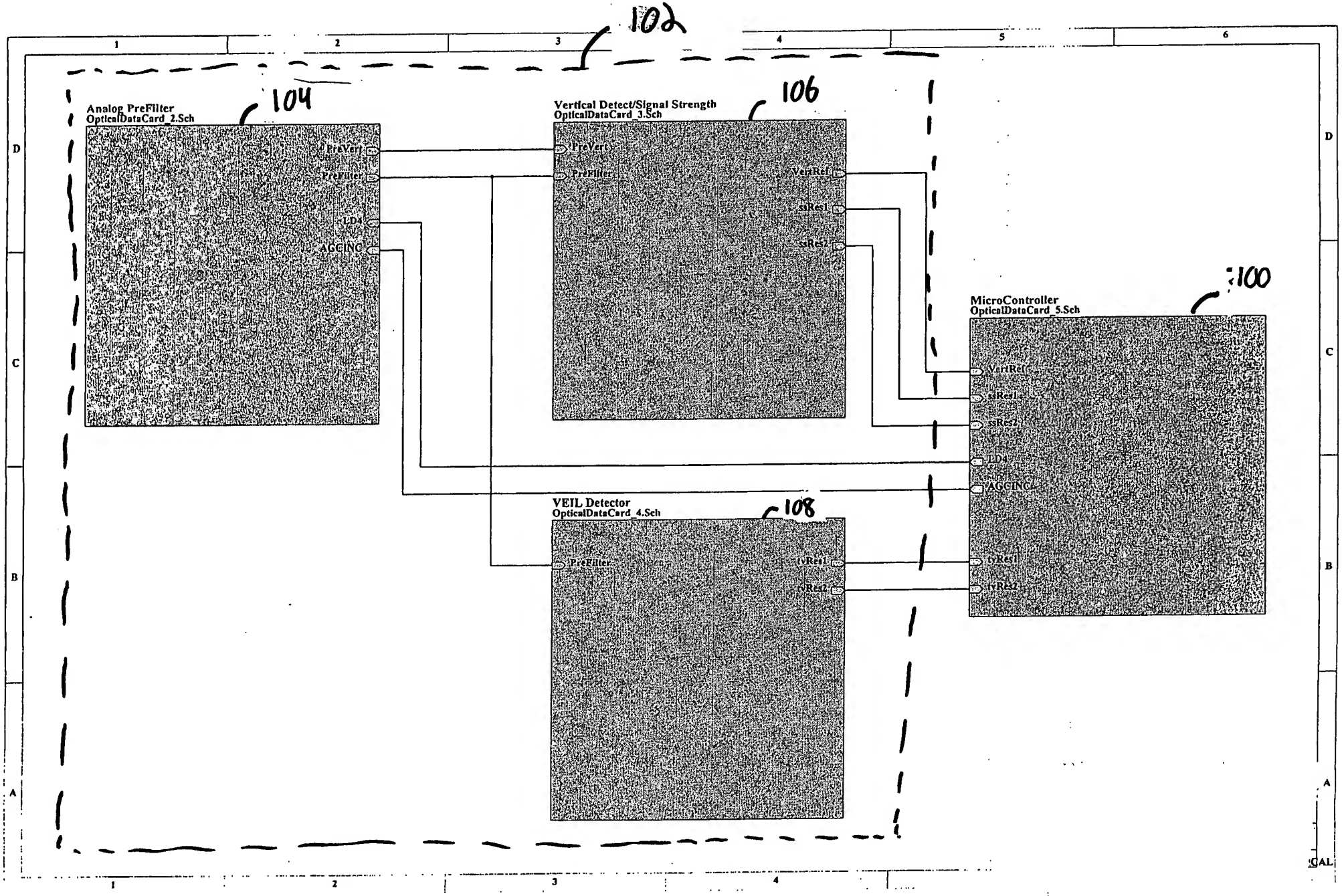

102
Analog PreFilter
OpticalDataCard_2.Sch
104
PreVert
PreFilter
LD4
AGCINC
Vertical Detect/Signal Strength
OpticalDataCard_3.Sch
106
PreVert
PreFilter
VertRef
ssRes1
ssRes2
MicroController
OpticalDataCard_5.Sch
100
VertRef
ssRes1
ssRes2
LD4
AGCINC
tvRes1
tvRes2
VEIL Detector
OpticalDataCard_4.Sch
108
PreFilter
tvRes1
tvRes2

Fig. 7

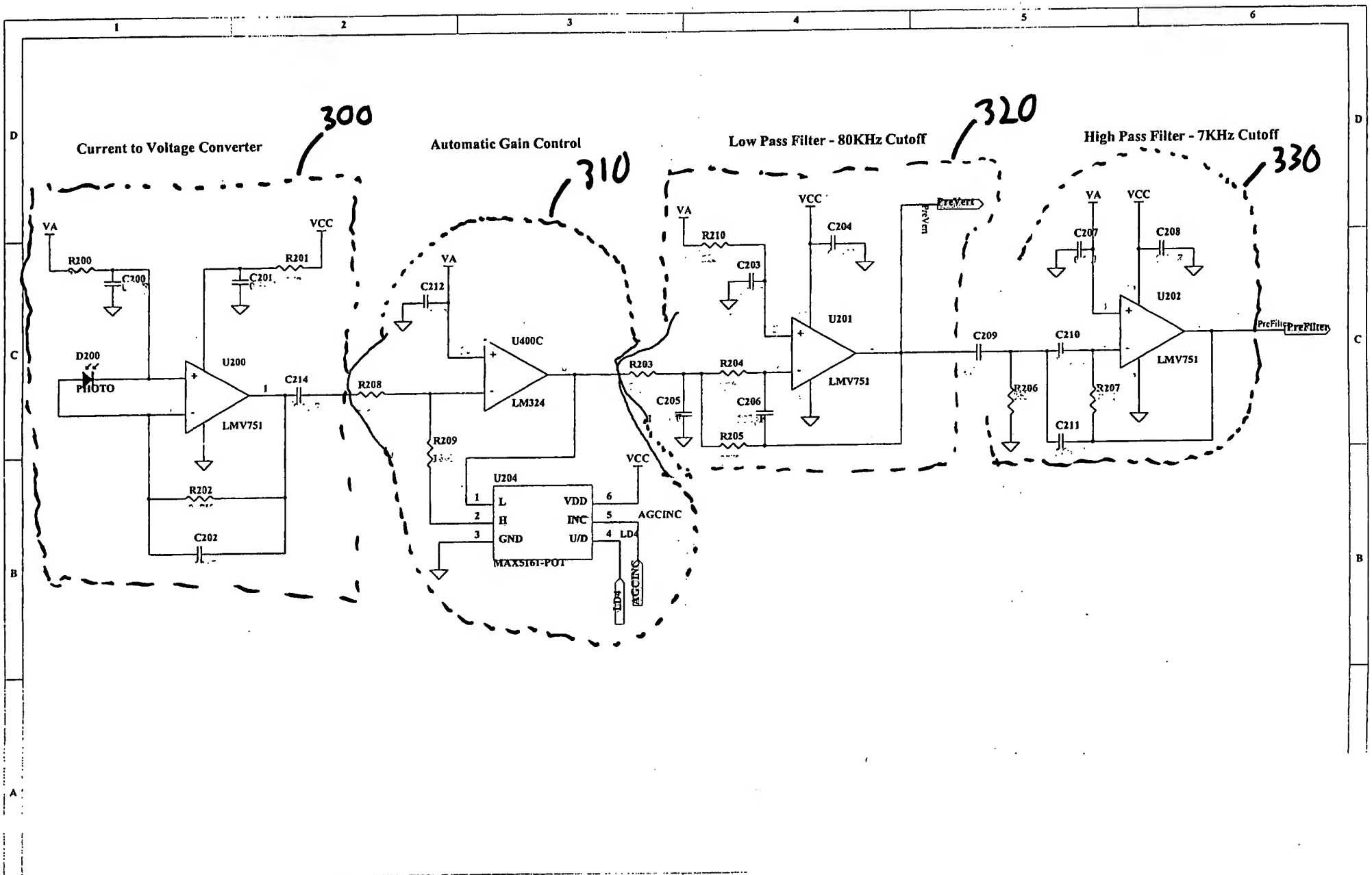

Current to Voltage Converter
300
Automatic Gain Control
310
Low Pass Filter - 80KHz Cutoff
320
High Pass Filter - 7KHz Cutoff
330
VA
VCC
R200
C200
R201
C201
D200
PHOTO
U200
LMV751
C214
R202
C202
C212
U400C
LM324
R208
R209
U204
L
H
GND
VDD
INC
U/D
MAX5161-POT
AGCINC
LD4
R210
C203
C204
U201
LMV751
R203
R204
R205
C205
C206
PreVert
C209
C210
C211
R206
R207
U202
LMV751
PreFilter

Fig. 8

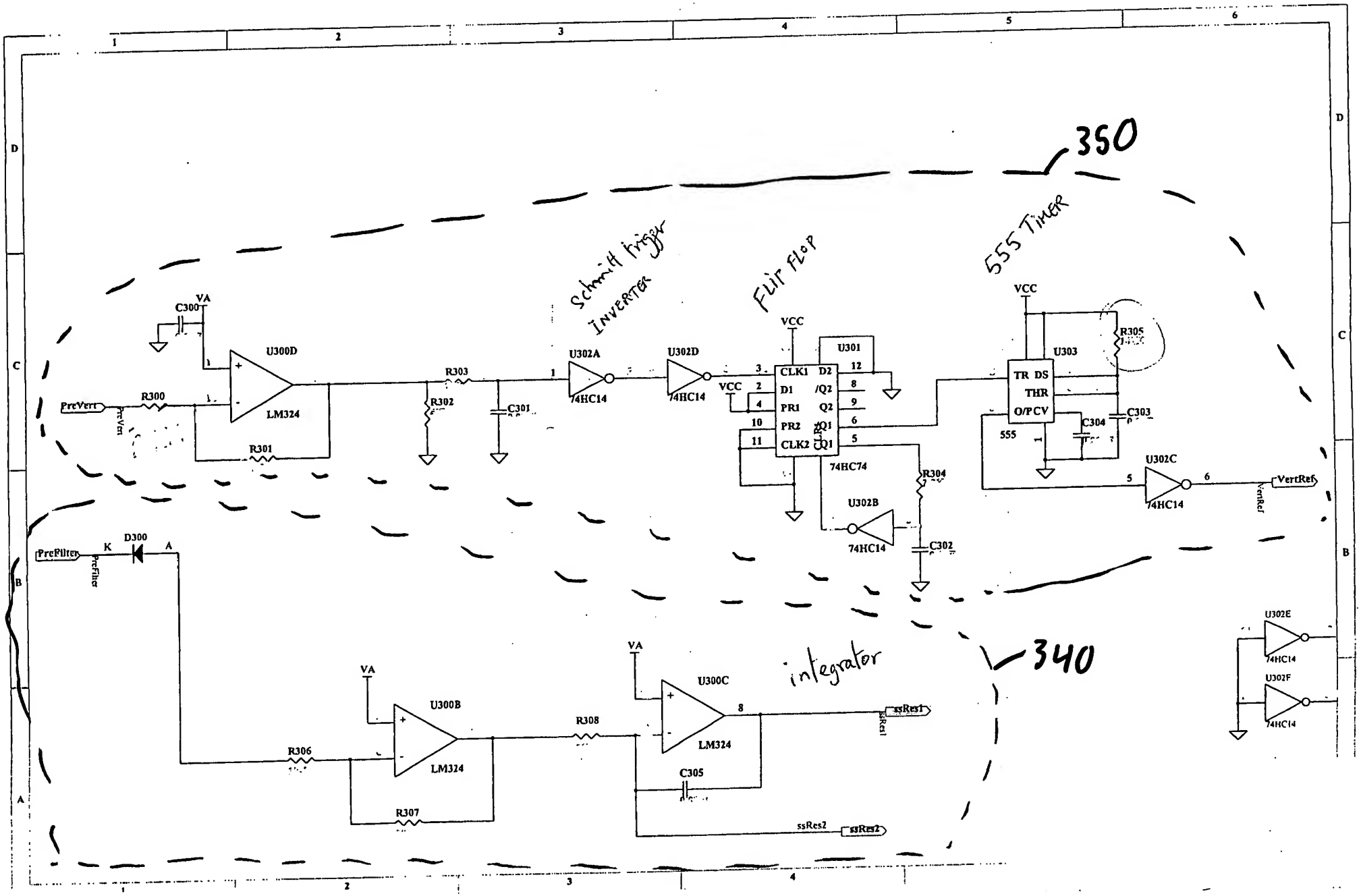

350
Schmitt trigger inverter
Flip flop
555 Timer
VA
C300
U300D
PreVert
R300
LM324
R301
R303
R302
C301
U302A
74HC14
U302D
74HC14
VCC
U301
CLK1
D1
PR1
PR2
CLK2
D2
/Q2
Q2
/Q1
Q1
74HC74
VCC
U303
TR
THR
O/PCV
555
R305
C304
C303
U302C
74HC14
VertRef
R304
U302B
74HC14
C302
PreFilter
D300
K
A
340
integrator
VA
U300B
LM324
R306
R307
R308
VA
U300C
LM324
C305
ssRes1
ssRes2
U302E
74HC14
U302F
74HC14

Fig. 9

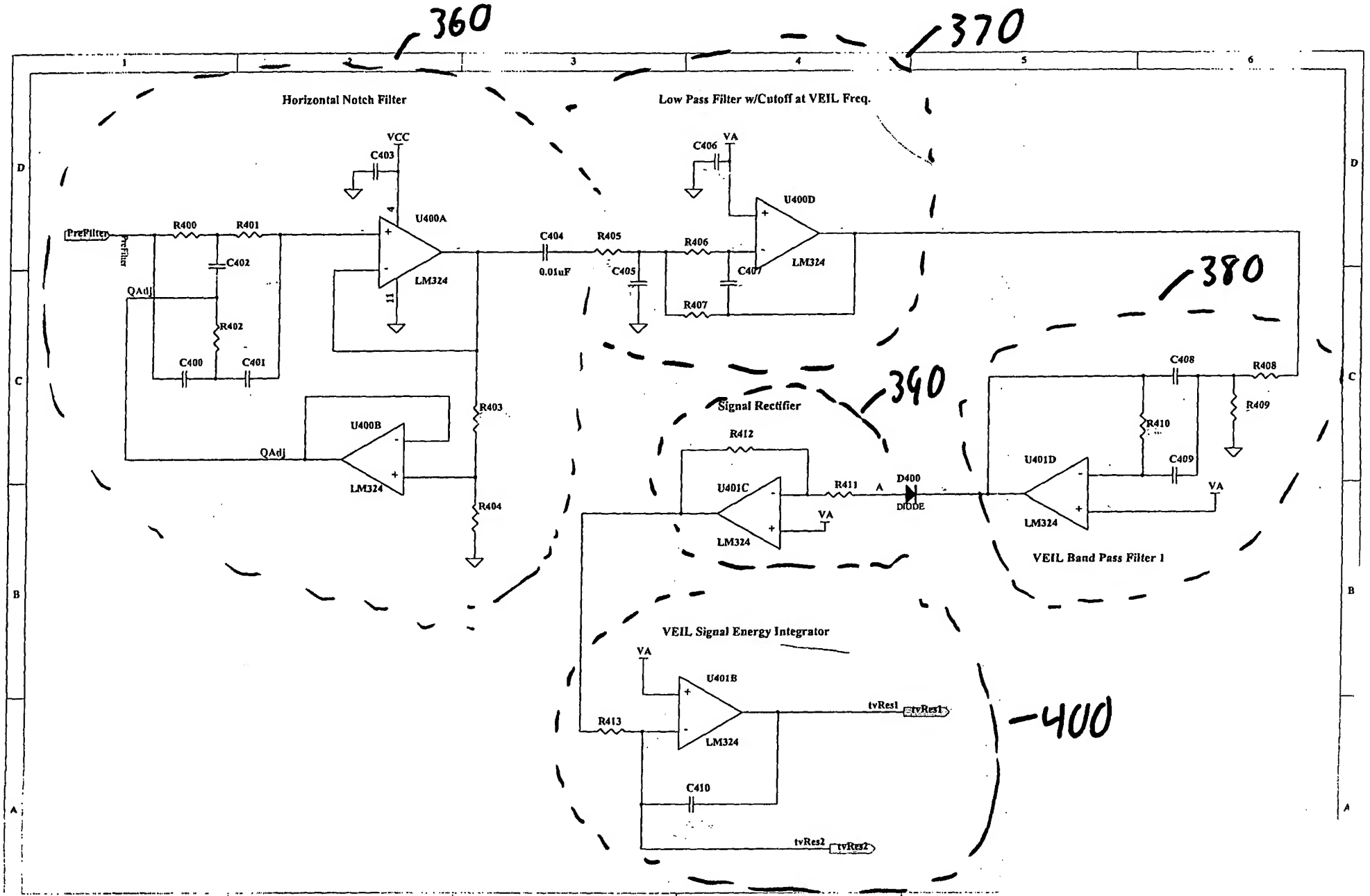

360
370
Horizontal Notch Filter
Low Pass Filter w/Cutoff at VEIL Freq.
VCC
C403
U400A
LM324
PreFilter
R400
R401
C402
QAdj
R402
C400
C401
R403
U400B
LM324
QAdj
R404
C404
0.01uF
R405
C405
C406
VA
U400D
LM324
R406
C407
R407
380
Signal Rectifier
340
R412
U401C
LM324
VA
R411
A
D400
DIODE
C408
R408
R410
R409
U401D
C409
VA
LM324
VEIL Band Pass Filter 1
VEIL Signal Energy Integrator
VA
U401B
LM324
R413
tvRes1
C410
tvRes2
400

Fig. 10

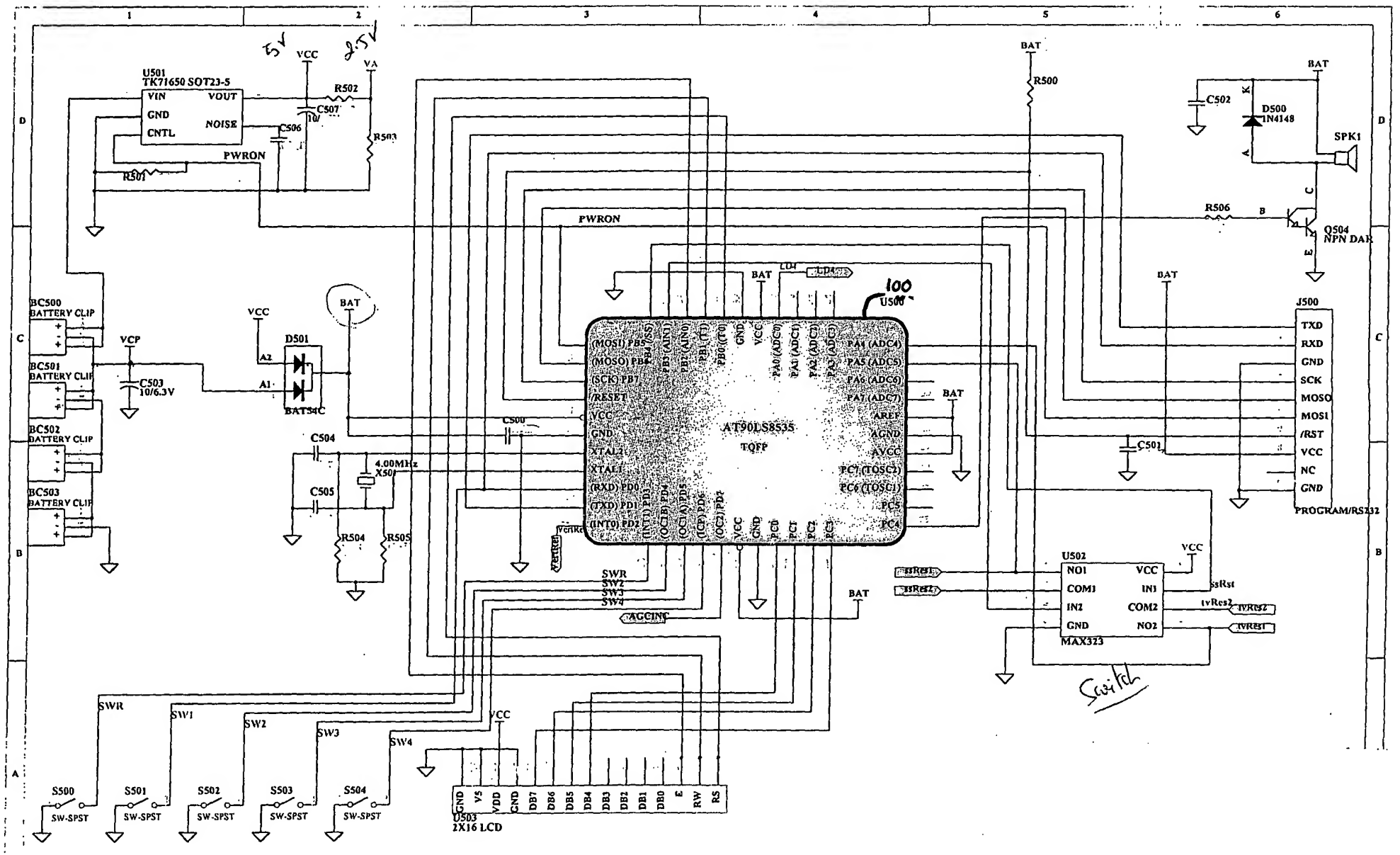
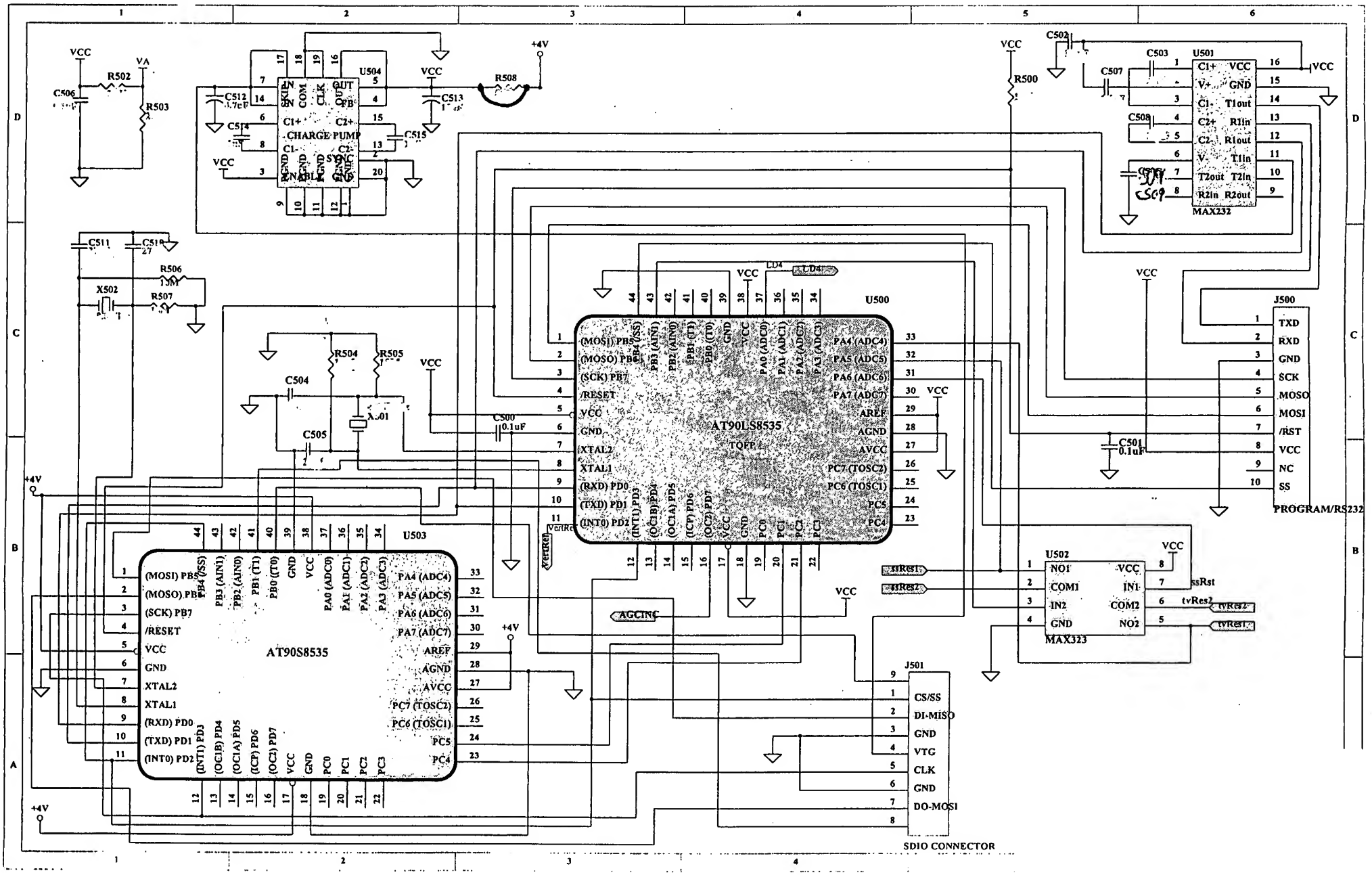

U501
TK71650 SOT23-5
VIN
VOUT
GND
NOISE
CNTL
PWRON
R501
R502
R503
C506
C507
VCC
VA
5V
2.5V
BC500
BATTERY CLIP
BC501
BATTERY CLIP
BC502
BATTERY CLIP
BC503
BATTERY CLIP
VCP
C503
10/6.3V
D501
BAT54C
A2
A1
BAT
C504
C505
4.00MHz
X501
R504
R505
C500
U500
AT90LS8535
TQFP
(MOSI) PB5
(MISO) PB6
(SCK) PB7
/RESET
VCC
GND
XTAL2
XTAL1
(RXD) PD0
(TXD) PD1
(INT1) PD3
(INT0) PD2
PA1 (ADC1)
PA5 (ADC5)
PA6 (ADC6)
PA7 (ADC7)
AREF
AGND
AVCC
PC7 (TOSC2)
PC6 (TOSC1)
PC5
PC4
AGCINT
SWR
SW1
SW2
SW3
SW4
R500
C502
D500
1N4148
SPK1
R506
Q504
NPN DAR
C501
J500
TXD
RXD
GND
SCK
MOSO
MOSI
/RST
VCC
NC
GND
PROGRAM/RS232
U502
NO1
COM1
IN2
GND
VCC
IN1
COM2
NO2
MAX323
S500
S501
S502
S503
S504
SW-SPST
U503
2X16 LCD
GND
VS
VDD
GND
DB7
DB6
DB5
DB4
DB3
DB2
DB1
DB0
E
RW
RS

Fig. 11


U500
AT90LS8535
TQFP
U503
AT90S8535
U501
MAX232
U502
MAX323
U504
CHARGE PUMP
J500
PROGRAM/RS232
J501
SDIO CONNECTOR
VCC
+4V
GND
R500
R502
R503
R504
R505
R506
R507
R508
C500 0.1uF
C501 0.1uF
C502
C503
C504
C505
C506
C507
C508
C509
C511
C512
C513
C514
C515
X502
A.01
AGCINC
LD4
(MOSI) PB5
(MOSO) PB6
(SCK) PB7
/RESET
XTAL2
XTAL1
(RXD) PD0
(TXD) PD1
(INT0) PD2
PA4 (ADC4)
PA5 (ADC5)
PA6 (ADC6)
PA7 (ADC7)
AREF
AGND
AVCC
PC7 (TOSC2)
PC6 (TOSC1)
PC5
PC4
TXD
RXD
SCK
MOSO
MOSI
/RST
NC
SS
CS/SS
DI-MISO
VTG
CLK
DO-MOSI

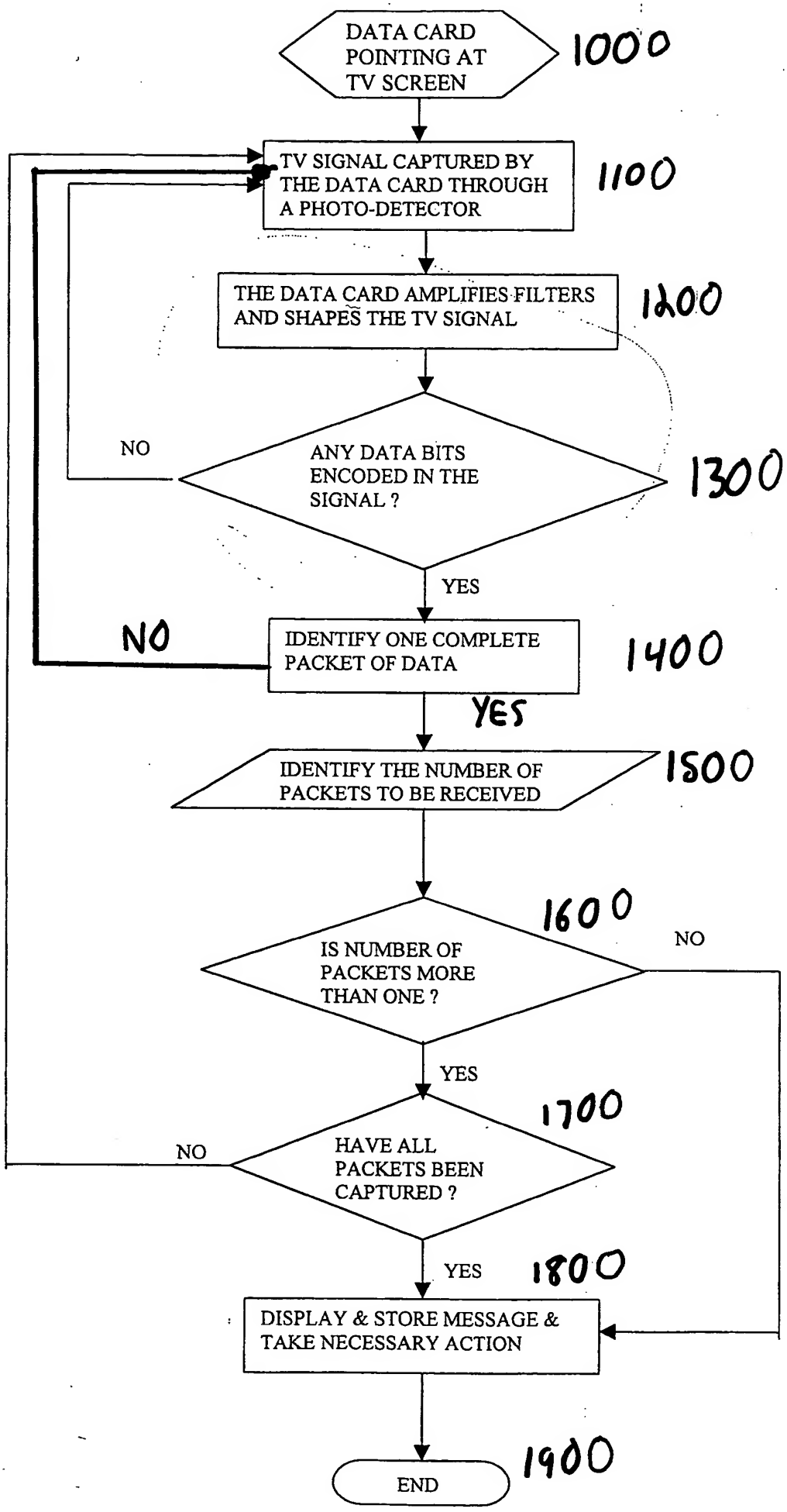
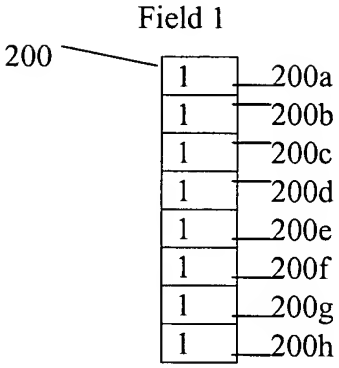

DATA CARD POINTING AT TV SCREEN
1000
TV SIGNAL CAPTURED BY THE DATA CARD THROUGH A PHOTO-DETECTOR
1100
THE DATA CARD AMPLIFIES FILTERS AND SHAPES THE TV SIGNAL
1200
NO
ANY DATA BITS ENCODED IN THE SIGNAL ?
1300
YES
NO
IDENTIFY ONE COMPLETE PACKET OF DATA
1400
YES
IDENTIFY THE NUMBER OF PACKETS TO BE RECEIVED
1500
1600
IS NUMBER OF PACKETS MORE THAN ONE ?
NO
YES
1700
NO
HAVE ALL PACKETS BEEN CAPTURED ?
YES
1800
DISPLAY & STORE MESSAGE & TAKE NECESSARY ACTION
END
1900

Fig. 12

FIG. 13

Prior Art



Present Invention

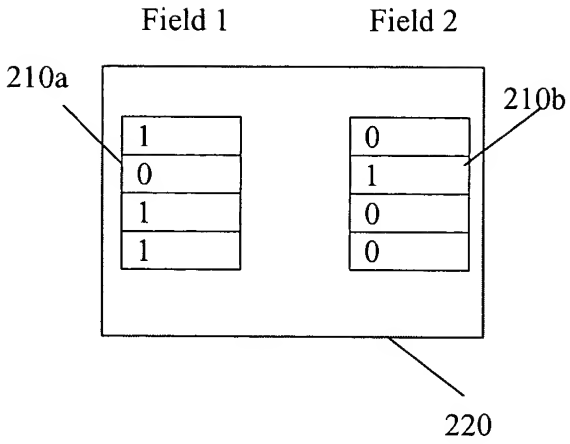
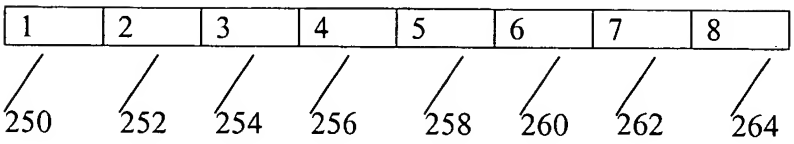


FIG. 14

Data Packet